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(71)Applicant : FUJI PHOTO FILM CO LTD

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(72)Inventor : KITATANI KATSUSHI

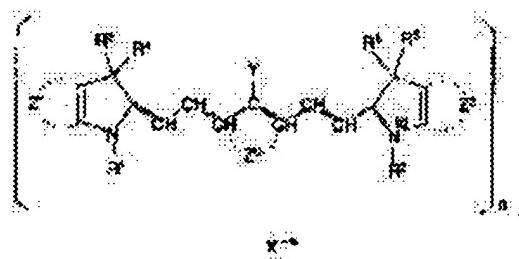
AOSHIMA KEITARO

(54) LASER BEAM DIRECT PLOTTING TYPE LITHOGRAPHIC PRINTING PLATE MATERIAL

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a laser beam direct plotting type lithographic printing plate material capable of a direct plate making from digital data, having high sensitivity and excellent in suitability to printing, by recording with IR laser.

SOLUTION: The lithographic printing plate material contains a cyanine dye represented by the formula as an IR absorber. In the formula, each of R1-R6 is an alkyl, each of Z1 and Z2 is a nonmetallic atomic group required to form a benzo or naphtho condensed ring together with C=C, Z3 is a nonmetallic atomic group required to form a 5- or 6-membered ring together with CH-C=CH, Y is H or a monovalent substituent, X is an n-valent anion and (n) is an integer of 2-4.



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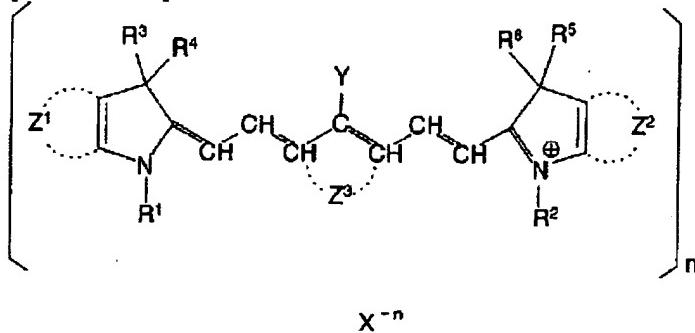
CLAIMS

[Claim(s)]

[Claim 1] The charge of a laser straight-writing mold lithography plate characterized by including the cyanine dye expressed with the following general formula (1) as an infrared absorption agent.

General formula (1)

[Formula 1]



the inside of the above-mentioned general formula (1), and R1 -R6 an alkyl group -- expressing -- Z1 And Z2 a nonmetallic atomic group required to form the benzocondensed ring or the naphth condensed ring with C=C -- expressing -- Z3 A nonmetallic atomic group required to form five to 6 membered-ring with CH-C=CH is expressed, Y expresses a hydrogen atom or a univalent substituent, X-n expresses the anion of n **, and n expresses the integer of 2-4.

[Claim 2] An alkali fusibility binder, an acid generator, the charge of a laser straight-writing mold lithography plate according to claim 1 characterized by including an acid cross-linking compound further.

[Claim 3] The charge of a laser straight-writing mold lithography plate according to claim 1 characterized by including further an alkali fusibility binder and the matter to which it is pyrolysis nature and the solubility of said alkali fusibility binder is substantially reduced in the condition of not decomposing.

soluble / Solubility

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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Field of the Invention] This invention relates to the charge of a lithography plate which can carry out direct platemaking using infrared laser from the digital signal of a computer etc. especially and in which the so-called direct platemaking is possible about the image recording ingredient which can be used as a plate for lithography.

[0002]

[Description of the Prior Art] What is depended on the photopolymerization system which exposes conventionally the thing, ** blue, or green depended on ** xerography as a system engraved directly using the laser which emits light from the digital data of a computer, the thing which carried out the laminating of the ** silver salt on the photopolymer, the thing to depend on ** silver salt diffusion transfer process are proposed. However, the thing using the xerography of ** has the complicated process of image formation, such as electrification, exposure, and development, and equipment will become complicated and large-scale. ** In what is depended on a photopolymerization system, to blue or a green light, since it is a high sensitivity plate, the handling by the ** room becomes difficult. By the approach of ** and **, in order to use silver salt, though still more natural, there is a fault whose processing of development etc. becomes complicated and by which silver is contained in processing waste fluid.

[0003] On the other hand, as for development of the laser in recent years, **** better **, the solid state laser which emits 1200nm infrared radiation from the wavelength of 760nm especially, and semiconductor laser can come to hand [high power and a small thing] now easily. As the record light source at the time of engraving directly from digital data, such as a computer, such laser is very useful and Kamiichi of the laser platemaking machine using the semiconductor laser which emits light near 830nm, and the YAG laser which emits light to 1064nm is carried out. However, since sensitization wavelength is a light region 760nm or less, many practically useful photosensitive record ingredients cannot carry out image recording in such infrared laser. For this reason, an ingredient recordable [with infrared laser] is desired.

[0004] As a record ingredient recordable [with such infrared laser], there are the onium salt, the resol resin, the novolak resin, and the record ingredient that consists of an infrared absorption agent which is indicated by JP,56-69193,A and which is indicated by resol mold phenol resin, the thermal recording ingredient containing carbon black, and JP,7-20629,A. Moreover, s-triazine by which halo alkylation was carried out, resol resin, novolak resin, and the record ingredient that consists of an infrared absorption agent are indicated by JP,7-271029,A. Such sensitive material was not necessarily enough in respect of sensibility and a printability, and the further amelioration was desired.

[0005]

[Problem(s) to be Solved by the Invention] Therefore, the purpose of this invention is offering

the charge of a laser straight-writing mold lithography plate which digital data, such as a computer's, to direct platemaking's is possible, showed high sensitivity, and was excellent in the printability by recording using the solid state laser and semiconductor laser which emit infrared radiation.

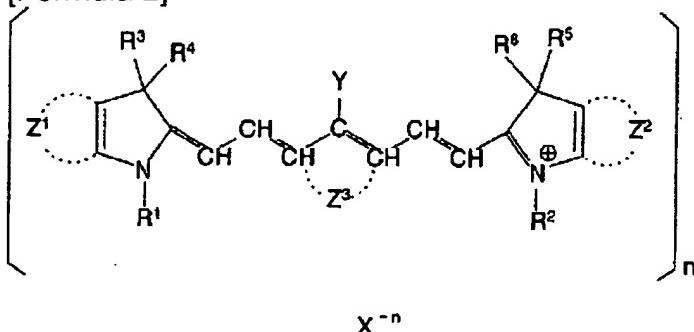
[0006]

[Means for Solving the Problem] The above-mentioned purpose was wholeheartedly attained by using the cyanine dye expressed with the following general formula (1) as an infrared absorption color as a result of research. That is, this invention is a charge of a laser straight-writing mold lithography plate characterized by including the cyanine dye expressed with the following general formula (1) as a (i) infrared absorption agent.

General formula (1)

[0007]

[Formula 2]



[0008] the inside of the above-mentioned general formula (1), and R1 -R6 an alkyl group -- expressing -- Z1 And Z2 a nonmetallic atomic group required to form the benzocondensed ring or the naphth condensed ring with C=C -- expressing -- Z3 A nonmetallic atomic group required to form five to 6 membered-ring with CH-C=CH is expressed, Y expresses a hydrogen atom or a univalent substituent, X expresses the anion of n **, and n expresses the integer of 2-4.

[0009] (ii) It is a charge of a laser straight-writing mold lithography plate given in (i) characterized by including further an alkali fusibility binder, an acid generator, and an acid cross-linking compound.

(iii) It is a charge of a laser straight-writing mold lithography plate given in (i) characterized by including further an alkali fusibility binder and the matter to which it is pyrolysis nature and the solubility of said alkali fusibility binder is substantially reduced in the condition of not decomposing.

[0010] Since the above-mentioned cyanine dye has an absorption field on long wavelength (about 800-1200nm), the direct platemaking of the charge of a lithography plate obtained by using this as an infrared absorption agent is attained from digital data, such as a computer, by recording using the solid state laser and semiconductor laser which emit infrared radiation. Moreover, the charge of a lithography plate from which the above-mentioned compound is obtained by performing light-and-heat conversion efficiently and using this compound as an infrared absorption agent since the cation part of plurality (2-4 pieces) is close through an opposite anion serves as high sensitivity, and becomes the thing excellent in the printability.

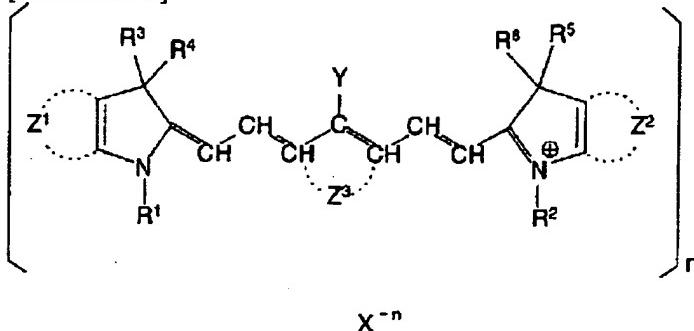
[0011]

[Embodiment of the Invention] Hereafter, this invention is explained to a detail. First, the cyanine dye expressed with the following general formula (1) used by this invention is explained.

General formula (1)

[0012]

[Formula 3]



[0013] The inside of the above-mentioned general formula (1), and $R^1 - R^6$ An alkyl group may be expressed and this alkyl group may have the substituent. Z^1 And Z^2 A nonmetallic atomic group required to form the benzocondensed ring or the naphth condensed ring with $C=C$ may be expressed, and a substituent may exist on these condensed rings. Z^3 A nonmetallic atomic group required to form five to 6 membered-ring with $CH-C=CH$ is expressed, Y expresses a hydrogen atom or a univalent substituent, $X-n$ expresses the anion of n^{**} , and n expresses the integer of 2-4.

[0014] It is $R^1 - R^6$ in more detail. The alkyl group expressed may express the low-grade alkyl groups (for example, a methyl group, n-butyl, an isopropyl group, n-pentyl radical, etc.) of carbon numbers 1-5 preferably, and these may have substituents (for example, a sulfonic group, a carboxylic-acid radical, a phosphonic acid radical, a hydroxyl group, etc.). Moreover, Z^1 Or Z^2 As a substituent which may exist on the benzocondensed ring formed with $C=C$, or the naphth condensed ring A sulfonic group, a carboxylic-acid radical, hydroxyl, a halogen atom The alkyl group which is not permuted [the permutation of for example, (F, Cl, Br, etc. and cyano groups), permutation amino groups (for example, a dimethylamino radical, a diethylamino radical, an ethyl-4-sulfo butylamino radical, JI (3-sulfopropyl) amino group, etc.), and carbon numbers 1-5 or] is mentioned.

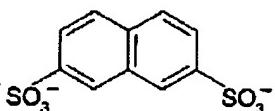
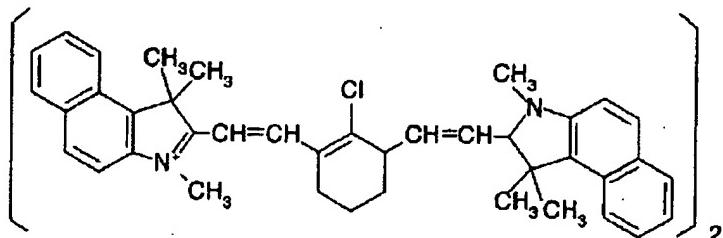
[0015] Z^3 As five to 6 membered-ring formed with $CH-C=CH$, cyclopentene ring, cyclohexene ring, 4, and 4-dimethyl cyclohexene ring etc. can be mentioned. As a univalent substituent expressed with Y , a low-grade alkyl group (for example, methyl group etc.), The phenyl group which is not permuted [a permutation or], an aralkyl radical (for example, benzyl etc.), Lower alkoxy groups (for example, methoxy group etc.), the JI permutation amino group for example, a dimethylamino radical, a diphenylamino radical, and a methylphenylamino radical -- A morpholino radical, an imidazolino radical, an ethoxycarbonyl piperazino radical, etc., Alkylcarbonyloxy radicals (for example, acetoxy radical etc.), an alkylthio group, cyano groups (for example, methylthio radical etc.), a nitro group, and halogen atoms (for example, F, Cl, Br, etc.) can be mentioned. Although $X-n$ expresses the anion of n^{**} , the compound of the following general formula (2) can be mentioned preferably.

[0016] General formula (2) Among the $Ar(SO_3^-)$ n above-mentioned general formula (2), Ar expresses aromatic series residue and expresses benzene residue, naphthalene residue, anthracene residue, etc. preferably. These may have a substituent on the ring. As that of this substituent The phenyl group which is not permuted [low-grade alkyl groups (for example, methyl group etc.), a permutation or], Aralkyl radicals (for example, benzyl etc.), a lower alkoxy group the (methoxy group etc. and JI) permutation amino group (for example, a dimethylamino radical --) [for example,] A diphenylamino radical, a methylphenylamino radical, a morpholino radical, an imidazolino radical, Alkylcarbonyloxy radicals (for example, acetoxy radical etc.), such as an ethoxycarbonyl piperazino radical, an alkylthio group, cyano groups (for example, methylthio radical etc.), a nitro group, and halogen atoms (for example, F, Cl, Br, etc.) can be mentioned.

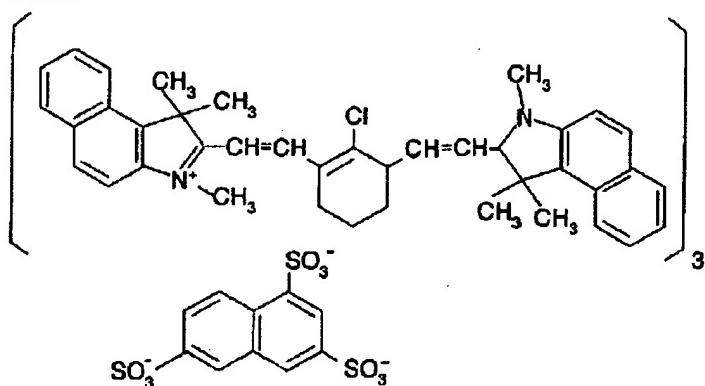
[0017] In this invention, the example of cyanine dye expressed with the above-mentioned general formula (1) used suitably is shown below. In addition, this invention is not limited to the following examples.

[0018]

[Formula 4]
(化合物 1)



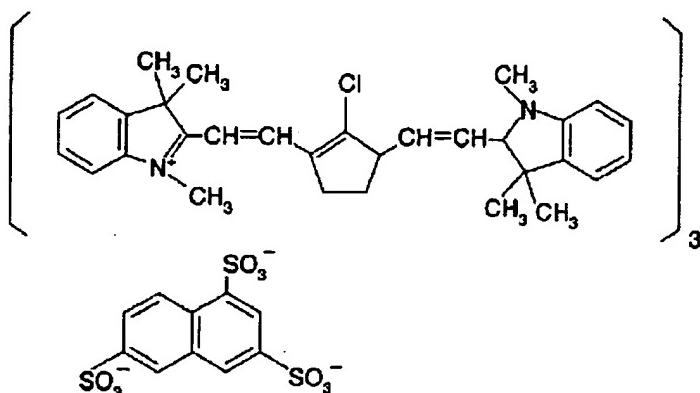
(化合物 2)



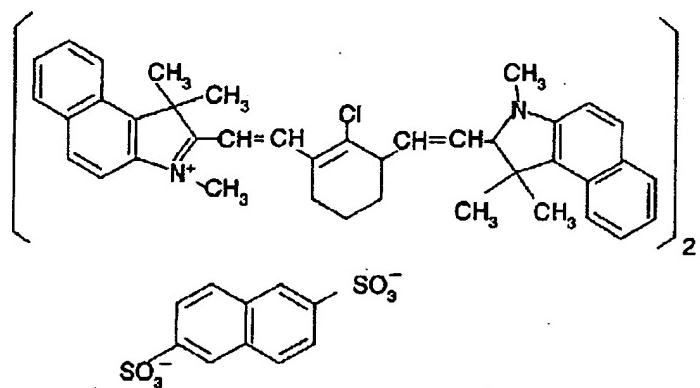
[0019]

[Formula 5]

(化合物3)



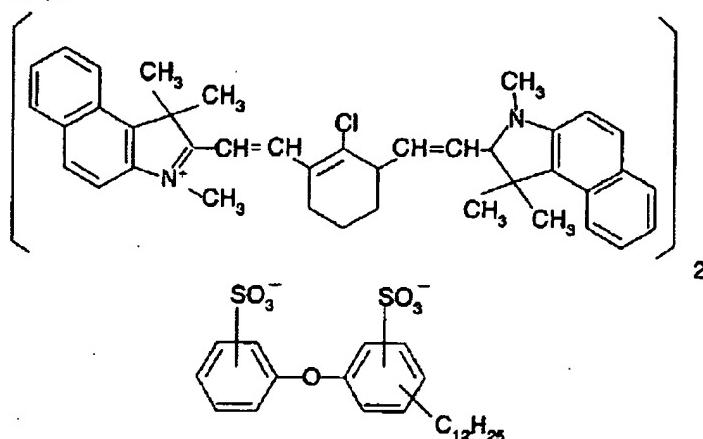
(化合物4)



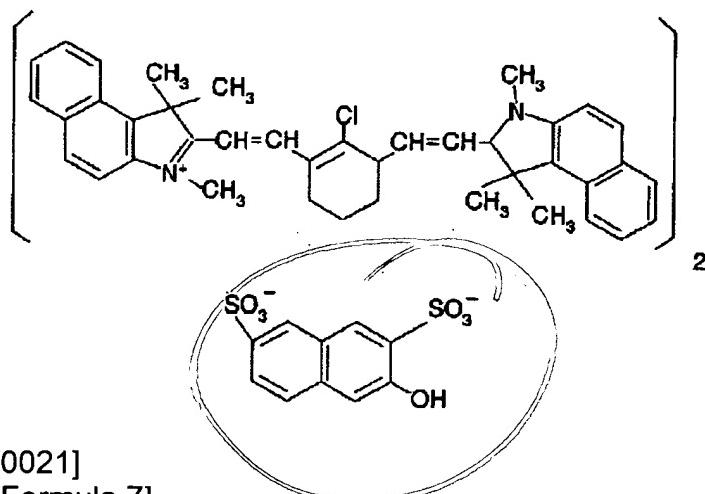
[0020]

[Formula 6]

(化合物 5)



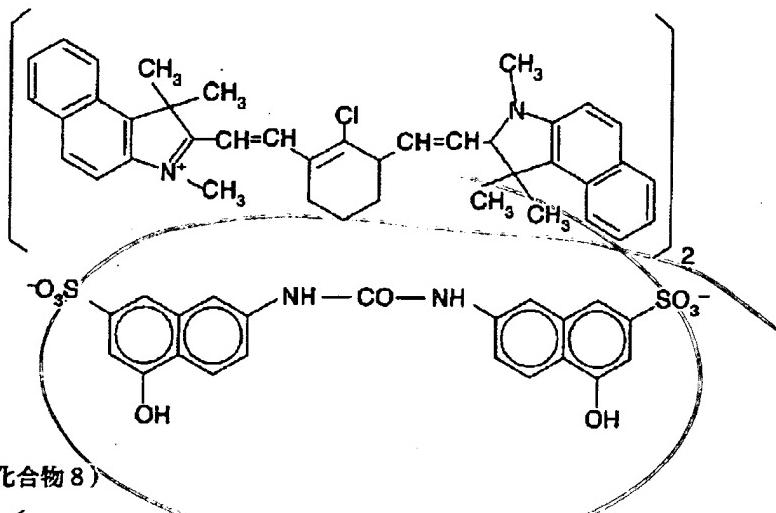
(化合物 6)



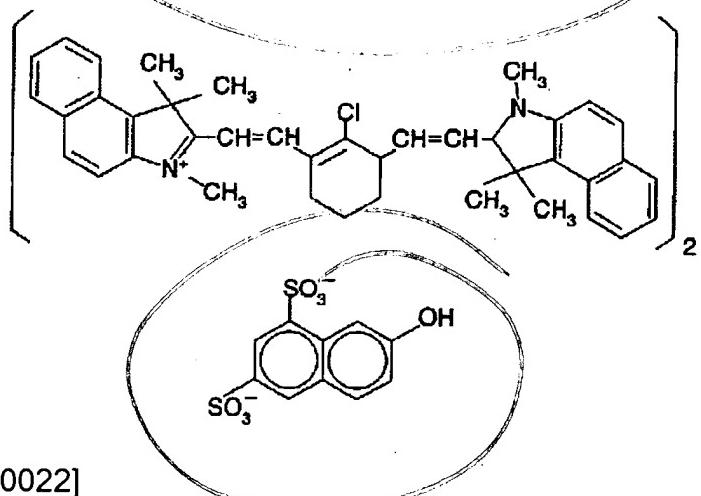
[0021]

[Formula 7]

(化合物 7)



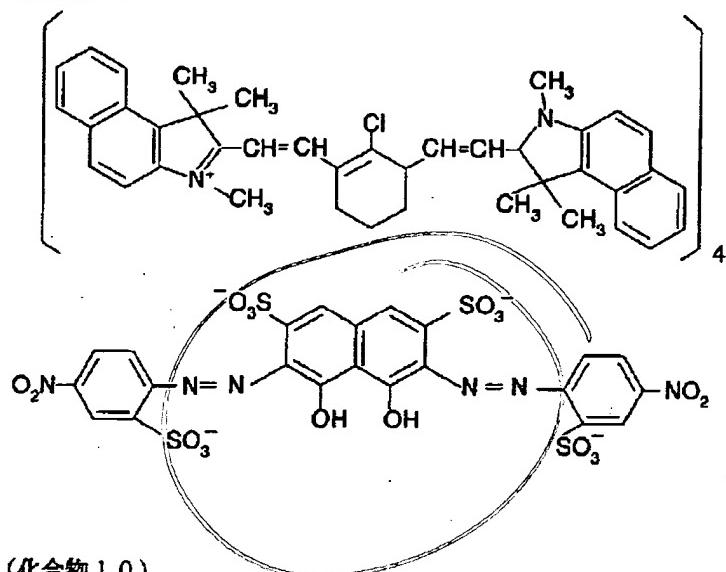
(化合物 8)



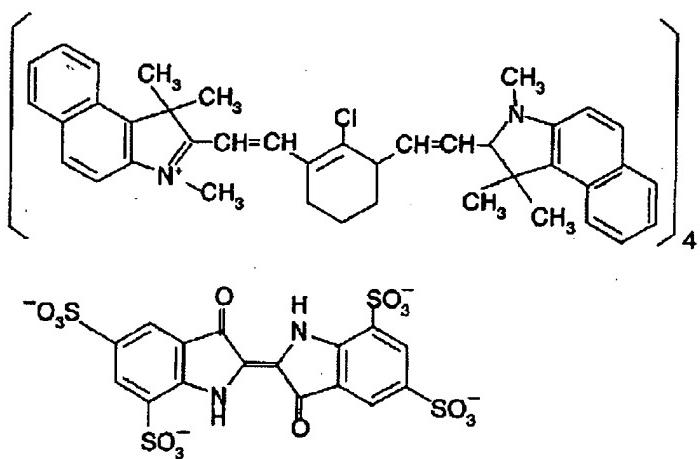
[0022]

[Formula 8]

(化合物 9)



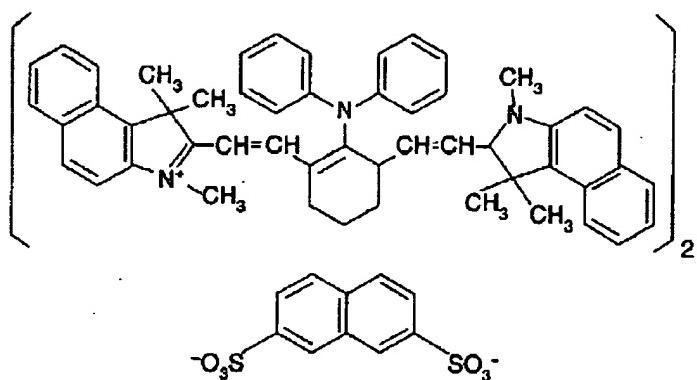
(化合物 10)



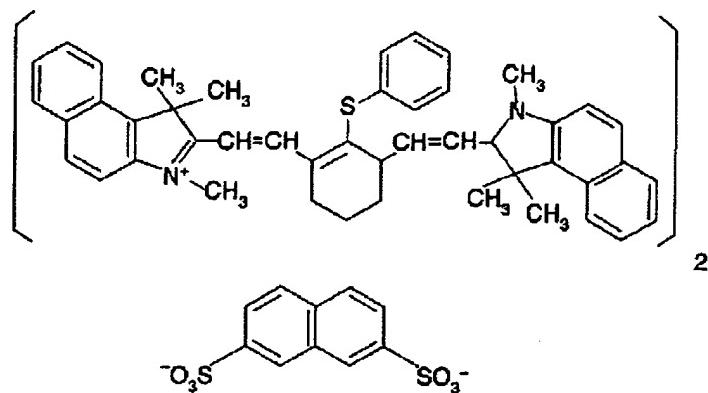
[0023]

[Formula 9]

(化合物 1 1)



(化合物 1 2)

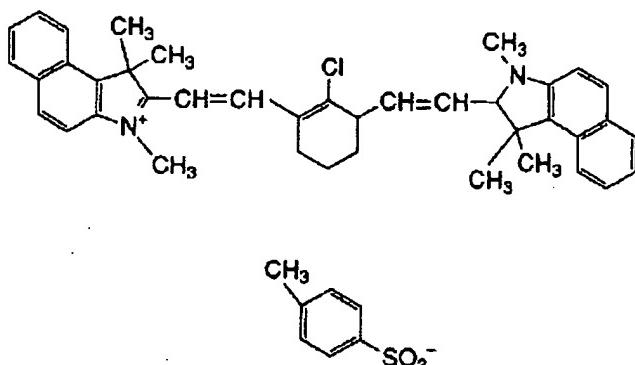


[0024] The concrete manufacture approach of cyanine dye expressed with the above-mentioned general formula (1) used in this invention is shown below.

The following (combination 1') 1.0g (1.33mmol) of [(compound 1) which the opposite anion of synthetic] (compound 1) put to p-toluenesulfonic acid, and replaced is dissolved in methanol 100ml, and the water solution which carried out 10ml HE dissolution of the naphthalene -2 and 7-disulfon acid sodium 2.21g (6.65mmol) of water is added. After stirring at a room temperature for 1 hour, 100ml of water is added and it stirs for 40 more minutes. The produced crystal was separated, rinsed and dried and 0.86 (g of compounds 1) was obtained (yield of 91%, melting point of 229-232 degrees C).

[0025]

[Formula 10]

(化合物 1¹)

[0026] Although the cyanine dye used for this invention is used effective in the charge of a laser straight-writing mold lithography plate, it is especially useful by the system illustrated next.

**** An alkali fusibility binder, an acid generator, the charge of a laser straight-writing mold lithography plate of the negative mold containing an acid cross-linking compound, ** An alkali fusibility binder, the charge of a laser straight-writing mold lithography plate of the positive type which contains further the matter to which it is pyrolysis nature and the solubility of this alkali fusibility binder is substantially reduced in the condition of not decomposing, ** It attaches in a printing machine, without performing the development after laser exposure, and can print as it is, the charge of a laser-straight-writing-type-water-less lithography plate which prepared the silicone rubber layer on the so-called non-processed type of printing version, and ** book sensitized material, and ** -- the charge of a laser straight-writing mold lithography plate of a positive type which the exposure section solubilizes to a developer with heating by laser although the compound of pyrolysis nature is not necessarily included.**

[0027] Next, the ingredient used for each above-mentioned example is explained in detail. ** As an ingredient used for an example, they are an alkali fusibility binder, an acid generator, and an acid cross-linking compound.

[0028] As an alkali fusibility binder used by "alkali fusibility binder" this invention, novolak resin, polyhydroxy styrene, acrylic resin, etc. can be mentioned. The novolak resin used by this invention is resin which is made to carry out condensation of phenols and the aldehydes under acid conditions, and is obtained. The novolak resin obtained from a phenol and formaldehyde as desirable novolak resin, for example, The novolak resin obtained from m-cresol, the novolak resin and p-cresol which are obtained from formaldehyde, and formaldehyde, The novolak resin obtained from o-cresol and formaldehyde, the novolak resin obtained from octyl phenol and formaldehyde, The novolak resin obtained from m-/p-mixing cresol and formaldehyde, the mixture of a phenol/cresol (any of o-, m-, p- or m-/p-, m-/o-, and o-/p-mixing are sufficient), the novolak resin obtained from formaldehyde, etc. are mentioned. Weight average molecular weight is 800-200,000, and the thing of 400-60,000 has [these novolak resin] desirable number average molecular weight.

[0029] As alkali fusibility binders other than the novolak resin used in this invention, polyhydroxy styrene, a hydroxystyrene-N-permutation maleimide copolymer, a hydroxystyrene-maleic-anhydride copolymer, the acrylic polymer that has an alkali fusibility radical, the urethane mold polymer which has an alkali fusibility radical are mentioned, for example. As an alkali fusibility radical, a carboxyl group, a phenolic hydroxyl group, a sulfonic group, a phosphonic acid radical, an imide radical, etc. are mentioned here.

[0030] Moreover, when using hydroxystyrene system polymers, such as a Polly p-hydroxystyrene, Polly m-hydroxystyrene, and p-hydroxystyrene-N-permutation maleimide

copolymer and a p-hydroxystyrene-maleic-anhydride copolymer, the thing of 4,000-300,000 has desirable weight average molecular weight to 2,000-500,000, and a pan.

[0031] As an example of the acrylic polymer which has an alkali fusibility radical, a polymer a methacrylic-acid-benzyl methacrylate copolymer, Pori (hydroxyphenyl methacrylamide), Pori (hydroxyphenyl carbonyloxy ethyl acrylate), Pori (2, 4-dihydroxy phenyl carbonyloxy ethyl acrylate), and given in eight to Japanese-Patent-Application-No. 211731 specification etc. is mentioned. these acrylic polymers -- weight average molecular weight -- 2,000-500,000 -- the thing of 4,000-300,000 is preferably desirable.

[0032] The resin which diphenylmethane diisocyanate, hexamethylene di-isocyanate, tetraethylene glycol, 2, and 2 1 screw (hydroxymethyl) propionic acid is made to react, and is obtained as an example of the urethane mold polymer which has an alkali fusibility radical is mentioned. The acrylic copolymer which has a hydroxystyrene system polymer and an alkali fusibility radical among these alkali fusibility polymers is desirable in respect of development nature.

[0033] this invention -- setting -- these alkali fusibility binders -- all the inside of the charge solid content of a lithography plate -- it is especially used with 30 - 80% of the weight of an addition preferably 20 to 85% of the weight ten to 90% of the weight. If the endurance of a recording layer gets worse that the addition of the high molecular compound of alkali fusibility is less than 10 % of the weight and 90 % of the weight is exceeded, it is not desirable by both sides of sensibility and endurance. Moreover, these alkali fusibility binders may be used only by one kind, or may be used combining two or more kinds.

[0034] The acid generator used for "acid generator" this invention can mention the compounds which generally generate an acid by the well-known light currently used for the photoinitiator of optical cationic polymerization, the photoinitiator of an optical radical polymerization, the optical decolorizing agent of coloring matter, optical alterant, a micro resist, etc., those mixture, etc., and it is the compound which generates an acid by heat or light, and it can use these, choosing them suitably.

[0035] For example, S.I.Schlesinger, Photogr.Sci.Eng., and 18,387 (1974), T. -- S.Bal et al., Polymer, and 21,423 (1980) etc. -- the diazonium salt of a publication -- U.S. Pat. No. 4,069,055 -- said -- 4,069,056 ammonium salt given in a number, JP,3-140,140,A, etc. -- D.C.Necker et al., Macromolecules, 17, 2468 (1984), C. S.Wen et al., Teh, Proc.Conf.Rad.Curing ASIA, p478, Tokyo, and Oct (1988), U.S. Pat. No. 4,069,055 -- said -- 4,069,056 phosphonium salt given in a number etc. -- J. V.Crivello et al., Macromolecules, 10 (6), 1307 (1977), Chem.& Eng.News, Nov.28, and p 31 (1988), Europe patent 104,143rd a number and U.S. Pat. No. 339,049 -- said -- the 410,201st a number -- Iodonium salt given in JP,2-150,848,A, JP,2-296,514,A, etc., J. V.Crivello et al., PolymerJ.17, 73 (1985), J. V.Crivello et al., J.Org.Chem., 43, 3055 (1978), W. R.Watt et al., J.Polymer Sci., Polymer Chem.Ed., 22, 1789 (1984), J. V.Crivello et al., Polymer Bull., 14,279 (1985), J. V.Crivello et al., Macromolecules, 14 (5), 1141 (1981), J.V.Crivello et al., J.PolymerSci., Polymer Chem.Ed., 17, and 2877 (1979), Europe patent 370,693rd A number, U.S. Pat. No. 3,902,114, Europe patent 233,567th a number -- said -- 297,443 a number -- said -- 297,442 a number -- U.S. Pat. No. 4,933,377 -- said -- 410,201 a number -- said -- 339,049 a number -- said -- 4,760,013 a number -- said -- 4,734,444 a number -- said -- 2,833,827 a number -- German country patent 2,904,626th a number -- said -- 3,604,580 a number -- said -- 3,604,581 sulfonium salt given in a number etc. -- J. V.Crivello et al., Macromolecules, 10 (6), 1307 (1977), J.V.Crivello et al., J.Polymer Sci., Polymer Chem.Ed., 17, and 1047 (1979) etc. -- the seleno NIUMU salt of a publication -- C. -- S.Wen et al., Teh, Proc.Conf.Rad.Curing ASIA, p478, Tokyo, and Oct (1988) etc. -- onium salts, such as arsonium salt of a publication, and [0036] U.S. Pat. No. 3,905,815, JP,46-4605,B, JP,48-36281,A, JP,55-32070,A, JP,60-239736,A, JP,61-169835,A, JP,61-169837,A, JP,62-58241,A, JP,62-212401,A, An organic halogenated compound given in

JP,63-70243,A, JP,63-298339,A, etc., KMeier et al., J.Rad.Curing, 13 (4), 26 (1986), T.P.Gill et al., Inorg.Chem., 19, 3007 (1980), D. Astruc, Acc.Chem.Res., 19 (12), An organic metal / organic halogenide given in 377 (1896), JP,2-161445,A, etc., S. Hayase et al., J.Polymer Sci., and 25,753 (1987), E. Reichman et al., J.Polymer Sci., Polymer Chem.Ed., 23, and 1 (1985), Q. Q.Zhu et al., J.Photochem., 36, 85, 39, and 317 (1987), B. Amitet al. and Tetrahedron Lett., (24) 2205 (1973), D. H.R.Barton et al., J.Chem.Soc., and 3571 (1965), P. M.Collins et al., J.Chem.Soc., Perkin I, and 1695 (1975), M.Rudinstei et al., Tetrahedron Lett., (17), 1445 (1975), J.W.Walker et al., J.Am.Chem.Soc., 110, 7170 (1988), S. C.Busman et al., J.Imaging Technol., 11 (4), (1985), H.M.Houlihan et al., Macromolecules, 21, 2001 (1988), P. M.Collins et al., J.Chem.Soc., Chem.Commun., 532 (1972), S. Hayase et al., Macromolecules, 18, 1799 (1985), E.Reichmanis et al., J.Electrochem.Soc., Solid State Sci.Technol., and 130 (6) F.M.Houlihan et al., Macromolecules, 21, 2001 (1988), the Europe patent 0290th, No. 750, said -- 046 and 083 a number -- said -- 156 and 535 a number -- said -- 271 and 851 a number -- said -- 0,388,343 a number and U.S. Pat. No. 3,901,710 -- said -- 4,181,531 a number -- The photo-oxide generating agent which has 0-nitrobenzyl mold protective group of a publication in JP,60-198538,A, JP,53-133022,A, etc., TUNOOKA et al., Polymer Preprints Japan, 35 (8), G. -- Berner et al., J.Rad.Curing, and 13 (4) W. J.Mijs et al., Coating Technol., 55 (697), 45 (1983), Akzo, H.Adachi et al., Polymer Preprints, Japan, 37 (3), the Europe patent 0199th and No. 672 -- said -- 84515 a number -- said -- 199 and 672 a number -- said -- 044 and 115 a number -- said -- No. 0101 or 122 and U.S. Pat. No. 4,618,554 -- said -- 4,371,605 a number -- said -- 4,431,774 a number and JP,64-18143,A -- The disulfon compound of a publication can be mentioned to a compound which photodissociates and generates a sulfonic acid, JP,61-166544,A, etc. which are represented by imino sulfonate given in JP,2-245756,A, JP,3-140109,A, etc.

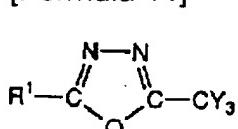
[0037] Moreover, the compound which introduced the acid generator into the principal chain or side chain of a polymer For example, M.E.Woodhouse et al., J.Am.Chem.Soc., 104, 5586 (1982), S. P.Pappas et al., J.Imaging Sci., 30 (5), 218 (1986), S.Kondo et al., Makromol.Chem.RapidCommun., and 9,625 (1988), Y. Yamada et al., Makromol, Chem.152, and 153,163 (1972), J. V.Crivello et al., J.Polymer Sci., Polymer Chem.Ed., 17, and 3845 (1979), U.S. Pat. No. 3,849,137 and the German country patent 3914407th, The compound of a publication can be used for JP,63-26653,A, JP,55-164824,A, JP,62-69263,A, JP,63-14603,A, JP,63-163452,A, JP,62-153853,A, JP,63-146029,A, etc. Furthermore, V.N.R.Pillai and Synthesis, (1), 1 (1980), A.Abad et al., and Tetrahedron Lett., (47) 4555 (1971), D. H.R.Barton et al. and J.Chem.Soc., (C), 329 (1970), U.S. Pat. No. 3,779,778, and Europe patent 126,712nd The compound which generates an acid by the light of a publication can also be used for a number etc.

[0038] What is especially used effectively in the compound which generates an acid by the above-mentioned heat or light is shown below.

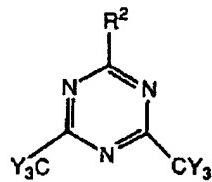
(1) S-triazine derivative expressed with the oxazole derivative or general formula (PAG2) expressed with the following general formula (PAG1) which the trihalomethyl group permuted.

[0039]

[Formula 11]



(PAG1)



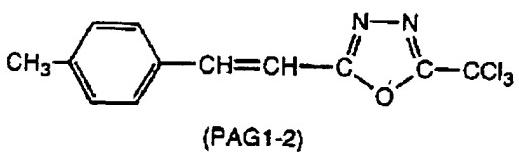
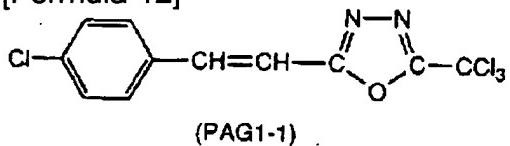
(PAG2)

[0040] The inside of a formula, and R1 The aryl group which is not permuted [a permutation

or] or an alkenyl radical, and R2 The aryl group of a permutation or a permutation, an alkenyl radical, an alkyl group, or -CY3 It is shown. Y shows a chlorine atom or a bromine atom. Although the following compounds can specifically be mentioned, it is not limited to these.

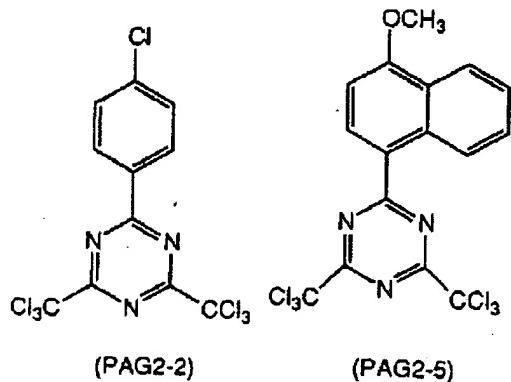
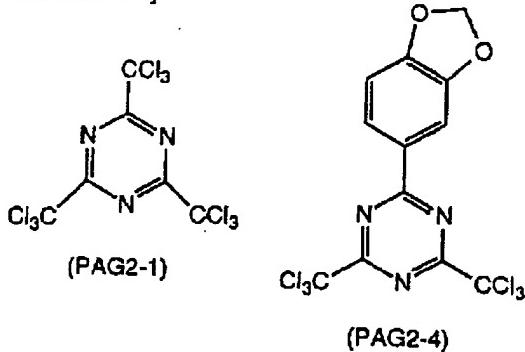
[0041]

[Formula 12]



[0042]

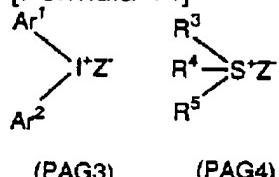
[Formula 13]



[0043] (2) Iodonium salt expressed with the following general formula (PAG3), or sulfonium salt expressed with a general formula (PAG4).

[0044]

[Formula 14]



[0045] The inside of a formula, and Ar1 And Ar2 The aryl group which is not permuted [a

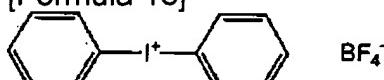
permutation or] is shown independently respectively. As a desirable substituent, an alkyl group, a halo alkyl group, a cycloalkyl radical, an aryl group, an alkoxy group, a nitro group, a carboxy group, an alkoxy carbonyl group, a hydroxy group, a sulphydryl group, and a halogen atom are mentioned. R3 and R4 And R5 The alkyl group or aryl group which is not permuted [a permutation or] is shown independently respectively. They are the aryl group of carbon numbers 6-14, the alkyl groups of carbon numbers 1-8, and those permutation derivatives preferably. As a desirable substituent, it is the alkoxy group of carbon numbers 1-8, the alkyl group of carbon numbers 1-8, a nitro group, a carboxyl group, a hydroxy group, and a halogen atom to an aryl group, and they are the alkoxy group of carbon numbers 1-8, a carboxyl group; and an alkoxy carbonyl group to an alkyl group.

[0046] A **** anion is shown. Z- For example, BF₄⁻, AsF₆⁻, and PF₆⁻, SbF₆⁻, SiF₆²⁻, ClO₄⁻, and CF₃SO₃⁻ etc. -- a perfluoro alkane sulfonic-acid anion -- Condensation polykaryotic aromatic series sulfonic-acid anions, such as a pentafluoro benzenesulfonic acid anion and a naphthalene-1-sulfonic-acid anion, Although an anthraquinone sulfonic-acid anion, 9, a 10-dimethoxyanthracene-2-sulfonic-acid anion, a sulfonic group content color, etc. can be mentioned, it is not limited to these. Moreover, R3 and R4 And R5 It is Ar1 to inner 2 lists. And Ar2 You may join together through each single bond or substituent.

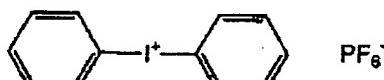
[0047] Although the compound shown below as an example is mentioned, it is not limited to these.

[0048]

[Formula 15]



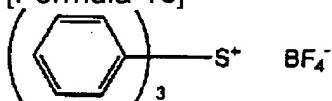
(PAG3-1)



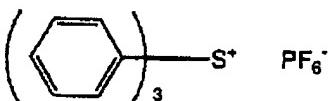
(PAG3-2)

[0049]

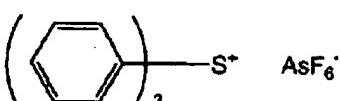
[Formula 16]



(PAG4-1)



(PAG4-2)



(PAG4-3)

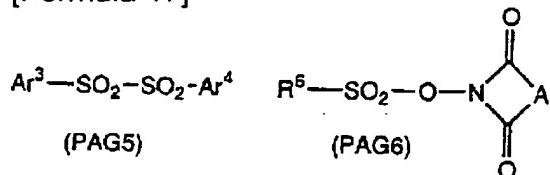
[0050] The general formula (PAG3) or (PAG4) the above-mentioned onium salt shown is well-known. For example, J.W.Knapczyk et al., J.Am.Chem.Soc., 91,145 (1969), A. L.Maycock et al., J.Org.Chem., 35, and 2532 (1970), E. Goethas et al., Bull.Soc.Chem.Belg., 73, and 546

(1964), H. M. Leicester, J.Ame.Chem.Soc., 51, and 3587 (1929), J. V.Crivello et al., J.Polym.Chem.Ed., 18, 2677 (1980), U.S. Pat. No. 2,807,648 -- and -- said -- 4,247,473 It is compoundable by the approach of a publication to a number, JP,53-101,331,A, etc.

(3) The imino sulfonate derivative expressed with the disulfon derivative or general formula (PAG6) expressed with the following general formula (PAG5).

[0051]

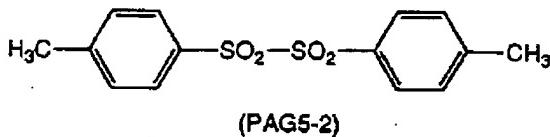
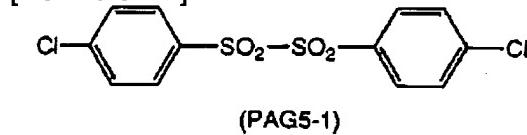
[Formula 17]



[0052] The inside of a formula, and Ar3 And Ar4 The aryl group which is not permuted [a permutation or] is shown independently respectively. R6 The alkyl group or aryl group which is not permuted [a permutation or] is shown. A shows the alkylene group which is not permuted [a permutation or], an alkenylene group, or an arylene radical. Although the compound shown below as an example is mentioned, it is not limited to these.

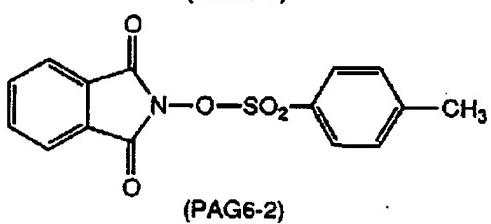
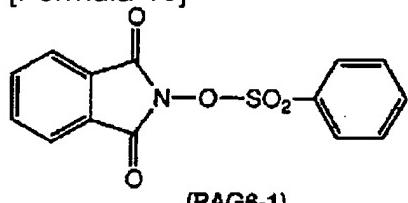
[0053]

[Formula 18]



[0054]

[Formula 19]



[0055] The addition of these acid generators is usually used in 0.001 - 40% of the weight of the range on the basis of the total solids of the charge of a lithography plate, and is preferably used in 0.1 - 5% of the weight of the range still more preferably 0.01 to 20% of the weight. Although the aromatic compound and heterocyclic compound by which the acid cross-linking compound used for "acid cross-linking compound" this invention points out the compound which constructs a bridge under existence of an acid, for example, the Pori permutation is

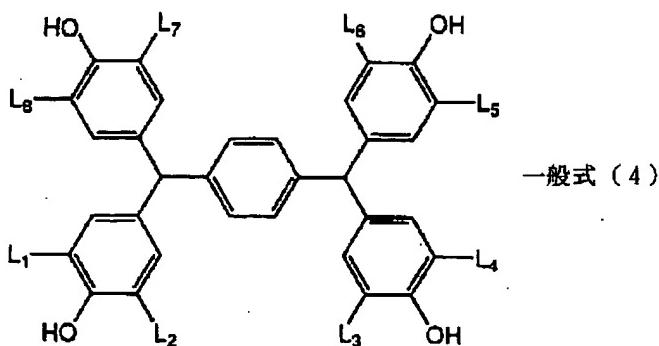
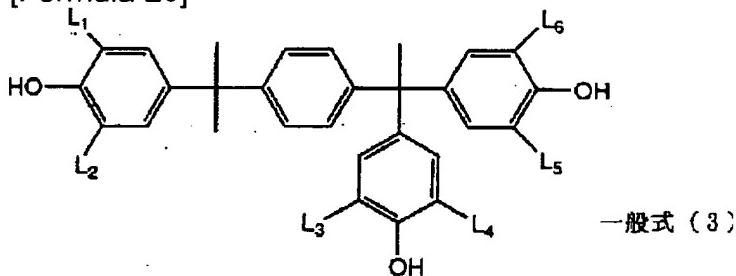
carried out by the hydroxymethyl group, the acetoxy methyl group, or the alkoxy methyl group are mentioned, the compound to which condensation of phenols and the aldehydes was carried out under basic conditions is mentioned as a desirable example also in it. As a desirable thing, the compound similarly obtained from a compound [to which condensation of a phenol and the formaldehyde was carried out under basic conditions as mentioned above], compound [which is obtained from m-cresol and formaldehyde], 4, and 4'-bisphenol, and formaldehyde, the other compounds indicated by GB No. 2,082,339 as resol resin are mentioned among the aforementioned compounds, for example. The thing of 200-50,000 has [these acid cross-linking compounds / weight average molecular weight] number average molecular weight desirable at 500-100,000.

[0056] A urea-formaldehyde condensate, the alkoxy substituted compound indicated at EP-A No. 0,212,482 are in the monomer and oligomer melamine-formaldehyde condensate list indicated by the aromatic compound permuted as other desirable examples by the alkoxy methyl or the oxy-RANIRU methyl group currently indicated by EP-A No. 0,212,482, EP-A No. 0,133,216, DE-A No. 3,634,671, and DE No. 3,711,264. Furthermore, other desirable examples are melamine-formaldehyde derivatives which have at least two isolation N-hydroxymethyl, N-alkoxy methyl, or N-acyloxy methyl group. Especially in this, an N-alkoxy methyl derivative is desirable. Moreover, low molecular weight or an oligomer silanol can be used as a silicon content cross linking agent. These examples are oligomer which reserve condensation is already carried out to dimethyl - and diphenyl-silane diol, and a list, and contains these units, for example, what was indicated by EP-A No. 0,377,155 can be used for them.

[0057] In the aromatic compound by which the Pori permutation was carried out by the alkoxy methyl group, and a heterocyclic compound, it has an alkoxy methyl group in the location contiguous to hydroxyl, and the alkoxy group of the alkoxy methyl group can mention a with a carbon number of 18 or less compound as a desirable example, and the compound of following general formula (3) - (6) can be especially mentioned as a desirable example.

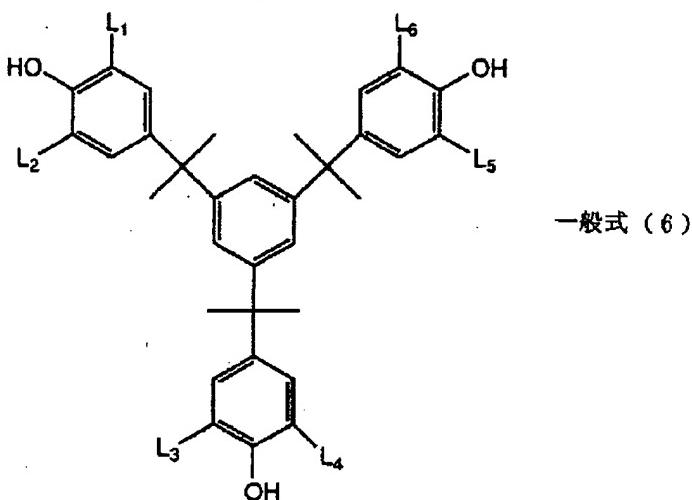
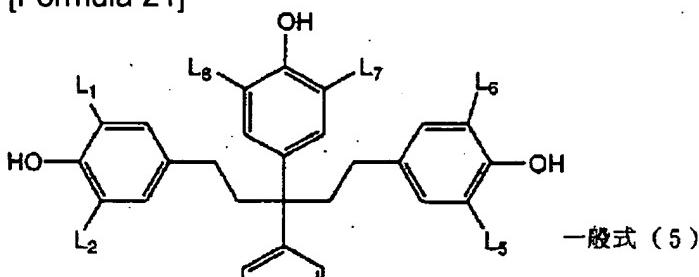
[0058]

[Formula 20]



[0059]

[Formula 21]



[0060] It is L1 -L8 among a formula. You may differ, even if the same, and the alkoxy methyl group permuted by the with a carbon number of 18 or less alkoxy group like methoxymethyl and ethoxy methyl is shown. These have high bridge formation effectiveness and it is desirable at the point which can raise print durability. The compound which constructs a bridge with the above-mentioned heat may be used only by one kind, and may be used combining two or more kinds. the acid cross-linking compound used for this invention -- the inside of the total solids of the charge of a lithography plate -- it is especially used with 20 - 70% of the weight of an addition preferably ten to 75% of the weight five to 80% of the weight. If the endurance of the sensitization layer of the charge of a lithography plate obtained as the addition of an acid cross-linking compound is less than 5 % of the weight gets worse and 80 % of the weight is exceeded, it is not desirable in respect of the stability at the time of preservation.

[0061] ** As an ingredient used for an example, they are an alkali fusibility binder and the matter to which the solubility of this alkali fusibility binder is substantially reduced in the condition of being pyrolysis nature and not decomposing. The compound explained in the example of the above-mentioned ** as an alkali fusibility binder is used as it is.

[0062] In the condition of being the pyrolysis nature used by "matter to which it is pyrolysis nature and solubility of alkali fusibility binder is substantially reduced in condition of not decomposing" this invention, and not decomposing, as matter to which the solubility of an alkali fusibility binder is reduced substantially, various onium salts and quinone diazide compounds are excellent in reducing the solubility of an alkali fusibility binder, and they are used suitably.

[0063] As an onium salt, diazonium salt, ammonium salt, phosphonium salt, iodonium salt,

sulfonium salt, a seleno NIUMU salt, arsonium salt, etc. can be mentioned. As an onium salt used in this invention, as a suitable thing For example, S.I.Schlesinger, Photogr.Sci.Eng., and 18,387 (1974), T. S.Bal et al., Polymer, and 21,423 (1980), Diazonium salt given in JP,5-158230,A etc., U.S. Pat. No. 4,069,055, said -- 4,069,056 ammonium salt given in a number, JP,3-140140,A, etc. -- D.C.Necker et al., Macromolecules, 17, 2468 (1984), C. S.Wen et al., Teh, Proc.Conf.Rad.Curing ASIA, p478, Tokyo, and Oct (1988), U.S. Pat. No. 4,069,055 -- said -- 4,069,056 phosphonium salt given in a number etc. -- J. V.Crivello et al., Macromolecules, 10 (6), 1307 (1977), Chem.& Eng.News, Nov.28, and p 31 (1988), Europe patent 104,143rd A number, U.S. Pat. No. 339,049, 410,201, Iodonium salt given in JP,2-150848,A, JP,2-296514,A, etc., J. V.Crivello et al., Polymer J,17, 73 (1985), J. V.Crivello et al., J.Org.Chem., 43, 3055 (1978), W. R.Watt et al., J.Polymer Sci., Polymer Chem.Ed., 22, 1789 (1984), J. V.Crivello et al., Polymer Bull., 14,279 (1985), J. V.Crivello et al., Macromolecules, 14 (5), 1141 (1981), J.V.Crivello et al., J.PolymerSci., Polymer Chem.Ed., 17, and 2877 (1979), Europe patent 370,693rd A number, U.S. Pat. No. 3,902,114, Europe patent 233,567th a number -- said -- 297,443 a number -- said -- 297,442 a number -- U.S. Pat. No. 4,933,377 -- said -- 410,201 a number -- said -- 339,049 a number -- said -- 4,760,013 a number -- said -- No. 4,734,444 -- said -- 2,833,827 a number -- German country patent 2,904,626th a number -- said -- 3,604,580 a number -- said -- sulfonium salt given in No. 3,604,581 etc. -- J. V.Crivello et al., Macromolecules, 10 (6), 1307 (1977), J.V.Crivello et al., J.Polymer Sci., Polymer Chem.Ed., 17, and 1047 (1979) etc. -- the seleno NIUMU salt of a publication -- C. -- S.Wen et al., Teh, Proc.Conf.Rad.Curing ASIA, p478, Tokyo, and Oct (1988) etc. -- the arsonium salt of a publication etc. is mentioned. Especially in this invention, diazonium salt is [among these] desirable. Moreover, as suitable diazonium salt, the thing of a publication is especially mentioned to JP,5-158230,A.

[0064] o-quinone diazide compound can be mentioned as suitable quinone diazide compounds. o-quinone diazide compound used for this invention is a compound which has at least one o-quinone diazide radical, it increases alkali fusibility by the pyrolysis and the compound of various structures can be used for it. That is, o-quinone diazide helps the solubility of a sensitized material system according to the effectiveness of losing the dissolution control ability of an alkali fusibility binder by the pyrolysis, and o-quinone diazide itself changing [both] to the matter of alkali fusibility. as o-quinone diazide compound used for this invention -- for example, J. Koser work "light-sensitive systems" (John Wiley & Sons.Inc.) -- although the compound of a publication can be used [page / 339-352nd], various aromatic series polyhydroxy compounds or the aromatic series amino compound, the sulfonate of o-quinone diazide made to react, or a sulfonic-acid amide is especially suitable. moreover, the ester of benzoquinone-(1 2)-diazido sulfonic-acid chloride or naphthoquinone-(1 2)-diazido-5-sulfonic-acid chloride, and pyrogallol-acetone resin which are indicated by JP,43-28403,B and U.S. Pat. No. 3,046,120 -- and -- said -- the 3,188,210th The ester of the benzoquinone-(1 2)-diazido sulfonic-acid chloride or naphthoquinone-(1 2)-diazido-5-sulfonic-acid chloride, and phenol-formaldehyde resin which are indicated by the number etc. is also used suitably.

[0065] Furthermore, it is a naphthoquinone. -(1 2)- Ester with diazido-4-sulfonic-acid chloride, phenol-formaldehyde resin, or cresol formaldehyde resin, naphthoquinone -(1 2)- The ester of diazido-4-sulfonic-acid chloride and pyrogallol-acetone resin is used suitably similarly. As other useful o-quinone diazide compounds, the reference of much patent relation has a report and it is known. For example, JP,47-5303,A, JP,48-63802,A, JP,48-63803,A, JP,48-96575,A, JP,49-38701,A, JP,48-13354,A, JP,41-11222,B, JP,45-9610,B, JP,49-17481,B, U.S. Pat. No. 2,797,213 -- said -- the 3,454,400th a number -- said -- the 3,544,323rd a number -- said -- the 3,573,917th a number -- said -- the 3,674,495th a number -- said -- the 3,785,825th A number and British patent 1,227,602nd a number -- said -- the 1,251,345th a number -- said -- the 1,267,005th a number -- said -- the 1,329,888th a number -- said -- the 1,330,932nd A number

and German patent 854,890th What is indicated in each reference (specification), such as a number, can be mentioned. The addition of o-quinone diazide compound used by this invention is 10 - 30% of the weight of the range especially preferably five to 30% of the weight still more preferably one to 50% of the weight to the total solids of the charge of a lithography plate preferably. Although these compounds can be used independently, you may use it as several sorts of mixture. The recordability of an image gets worse that the addition of o-quinone diazide compound is less than 1 % of the weight, on the other hand, if it exceeds 50 % of the weight, the endurance of the image section will deteriorate or sensibility will fall.

[0066] As a counter ion of an onium salt, 4 boric-acid fluoride, a 6 phosphorus-fluoride acid, A triisopropyl naphthalene sulfonic acid, 5-nitro-o-toluenesulfonic acid, 5-sulfosalicylic acid, 2, 5-dimethylbenzene sulfonic acid, 2 and 4, 6-trimethyl benzenesulfonic acid, 2-nitrobenzene sulfonic acid, 3-chlorobenzene sulfonic acid, 3-bromobenzene sulfonic acid, 2-fluoro capryl lactam naphthalene sulfonic acid, dodecylbenzenesulfonic acid, a 1-naphthol-5-sulfonic acid, 2-methoxy-4-hydroxy-5-benzoyl-benzenesulfonic acid, Para toluenesulfonic acid, etc. can be mentioned. The alkyl aromatic series sulfonic acid like a 6 phosphorus-fluoride acid, a triisopropyl naphthalene sulfonic acid, or 2 and 5-dimethylbenzene sulfonic acid is suitable also especially in these. The addition of the above-mentioned compounds other than o-quinone diazide compound is 10 - 30% of the weight of the range especially preferably five to 30% of the weight still more preferably one to 50% of the weight to the total solids of the charge of a lithography plate preferably.

[0067] It is related with an example. this invention persons ** Japanese Patent Application No. No. 26878 [nine to], Japanese Patent Application No. No. 26877 [nine to], Japanese Patent Application No. No. 10755 [nine to], Japanese Patent Application No. No. 36665 [nine to], Japanese Patent Application No. No. 89451 [nine to], Have applied to Japanese Patent Application No. No. 85328 [nine to], and Japanese Patent Application No. No. 89816 [nine to]. The system using the high molecular compound which contains in a side chain the functional group which generates a sulfonic acid, The system using the carboxylic-acid polymer protected with WO-9635143, US-5506090, EP-652483, EP-703499, US-5552260, and the acidolysis nature machine currently indicated by EP-600615 is mentioned. ** About an example, the dampening water unnecessary photosensitivity lithography version which is indicated by Japanese Patent Application No. No. 277889 [seven to] and which prepared the silicone rubber layer on the sensitized material similar to ** is mentioned. ** About an example, before [to heat] being indicated by JP,46-27919,B, it is fusibility insolubility or slightly, and using the record ingredient which mixed in the bottom of the effect of heat the polymer compound or constituent which can be made more to fusibility in a solvent is mentioned.

[0068] [Other components] In the charge of a lithography plate of this invention, various compounds may be added if needed in addition to the above. For example, the color which has big absorption in a light region can be used as a coloring agent of an image. Specifically Oil yellow #101, oil yellow #103, oil pink #312, the oil green BG Oil blue BOS, oil blue #603, oil black BY, Oil black BS, oil black T-505 (above product made from ORIENT Chemical industry), Victoria pure blue, a crystal violet (CI42555), Methyl Violet (CI42535), ethyl violet, Rhodamine B (CI145170B), Colors indicated by JP,62-293247,A, such as Malachite Green (CI42000) and a methylene blue (CI52015), can be mentioned. It is more desirable to add, since distinction of the image section and the non-image section tends to attach these colors after image formation. In addition, an addition is 0.01 - 10% of the weight of a rate to the charge total solids of a lithography plate.

[0069] Moreover, in the charge of a lithography plate concerning this invention, since the stability of the processing to development conditions is extended, an amphoteric surface active agent which is indicated by a nonionic surface active agent which is indicated by JP,62-251740,A and JP,3-208514,A, JP,59-121044,A, and JP,4-13149,A can be added. As an

example of a nonionic surface active agent, sorbitan tristearate, sorbitan monopalmitate, a sorbitan trio rate, a stearin acid monoglyceride, the polyoxyethylene nonylphenyl ether, etc. are mentioned. As an example of a double-sided activator, alkyl di(aminoethyl)glycine, an alkylpolyamino ethylglycine hydrochloride, 2-alkyl-N-carboxy ethyl-N-hydroxyethyl imidazolinium betaine, N-tetradecyl-N and N-betaine mold (for example, trade name Amogen K, the product made from the first Industry), etc. are mentioned. The rate of occupying in the charge of a lithography plate of the above-mentioned nonionic surface active agent and an amphoteric surface active agent has 0.05 - 15 desirable % of the weight, and it is 0.1 - 5 % of the weight more preferably.

[0070] Furthermore, a plasticizer is added in order to give the flexibility of a paint film etc. if needed into the charge of a lithography plate concerning this invention. For example, oligomer, a polymer, etc. of KISHIRU, a dioctyl phthalate, tricresyl phosphate, tributyl phosphate, trioctyl phosphate, tetrahydrofurfuryl oleate, an acrylic acid, or methacrylic acid are used to butyl phthalyl, a polyethylene glycol, tributyl citrate, a diethyl phthalate, dibutyl phtalate, and *****

[0071] Besides these, the above-mentioned onium salt, S-triazine by which halo alkylation was carried out and an epoxy compound, vinyl ether, the phenolic compound that has [Japanese Patent Application No. / No. 18120 / seven to] the hydroxymethyl group of a publication further, the phenolic compound which has an alkoxy methyl group may be added.

[0072] The charge of a lithography plate concerning this invention can usually melt each above-mentioned component to a solvent, and can manufacture it by applying on a suitable base material. As a solvent used here, ethylene dichloride, a cyclohexanone, A methyl ethyl ketone, a methanol, ethanol, propanol, ethylene glycol monomethyl ether, 1-methoxy-2-propanol, 2-methoxy ethyl acetate, 1-methoxy-2-propyl acetate, dimethoxyethane, methyl lactate, Although ethyl lactate, N,N-dimethylacetamide, N,N-dimethylformamide, tetramethyl urea, N-methyl pyrrolidone, dimethyl sulfoxide, a sulfolane, gamma-butyl lactone, toluene, water, etc. can be raised, it is not limited to this. these solvents are independent -- or it is mixed and used. The concentration of the above-mentioned component in a solvent (total solids containing an additive) is 1 - 50 % of the weight preferably. Moreover, speaking of the plate for lithography, generally, the coverage on the base material obtained after spreading and desiccation (solid content) is 0.5 - 5.0 g/m², although it changes with applications. It is desirable. As an approach of applying, although various approaches can be used, bar coating-machine spreading, rotation spreading, a spray coating cloth, curtain spreading, DIP spreading, the Ayr knife spreading, blade spreading, roll coating, etc. can be mentioned, for example. Although apparent sensibility becomes size as coverage decreases, the coat property of the image recording film falls.

[0073] In the charge of a lithography plate in this invention, the surfactant for improving spreading nature, for example, a fluorochemical surfactant which is indicated by JP,62-170950,A, can be added. A desirable addition is 0.05 - 0.5 % of the weight still more preferably 0.01 to 1% of the weight among [all] the charge solid content of a lithography plate.

[0074] As a base material used for this invention, it is a tabular object stable in dimension. for example, paper and plastics (for example, polyethylene and polypropylene --) the paper which polystyrene etc. laminated, and a metal plate (for example, aluminum --) plastic film (for example, diacetyl cellulose --), such as zinc and copper A cellulose triacetate, cellulose propionate, a butanoic acid cellulose, a cellulose acetate butyrate, Paper or plastic film etc. with which the metal like the above, such as a cellulose nitrate, polyethylene terephthalate, polyethylene, polystyrene, polypropylene, a polycarbonate, and a polyvinyl acetal, was laminated or vapor-deposited is contained.

[0075] As a base material of this invention, polyester film or an aluminum plate is desirable, also in it, dimensional stability is good and especially a comparatively cheap aluminum plate

has it. [desirable] A suitable aluminum plate may be an alloy plate which uses a pure aluminium plate and aluminum as a principal component, and contains the different element of a minute amount, and the plastic film with which aluminum was laminated or vapor-deposited further is sufficient as it. There are silicon, iron, manganese, copper, magnesium, chromium, zinc, a bismuth, nickel, titanium, etc. in the different element contained in an aluminium alloy. The content of the different element in an alloy is at most 10 or less % of the weight. Although especially suitable aluminum is pure aluminium in this invention, since manufacture on a refinement technique is difficult for completely pure aluminum, a different element may be contained slightly. Thus, the presentation is not specified and the aluminum plate of the material of well-known official business can be conventionally used for the aluminum plate applied to this invention suitably. The thickness of the aluminum plate used by this invention is 0.2mm - 0.8mm especially preferably 0.15mm - 0.4mm preferably about 0.1mm - about 0.6mm.

[0076] It precedes carrying out surface roughening of the aluminum plate, and cleaning processing by the surfactant, the organic solvent, or the alkaline water solution in order for a request to remove surface rolling oil is performed. Although the surface roughening process of the front face of an aluminum plate is performed by various approaches, it is performed by the approach of carrying out surface roughening mechanically, for example, the approach of carrying out dissolution surface roughening of the front face electrochemically, and the approach of carrying out selective dissolution of the front face chemically. As the mechanical approach, well-known approaches, such as the ball grinding method, a brushing method, the blasting grinding method, and buffing, can be used. Moreover, there is the approach of performing according to an alternating current or a direct current in a hydrochloric acid or the nitric-acid electrolytic solution as an electrochemical surface roughening method. Moreover, the approach which combined both as indicated by JP,54-63902,A can also be used. Thus, anodizing is performed in order that the aluminum plate by which surface roughening was carried out may raise surface water retention and abrasion resistance by request, after alkali-etching-processing and neutralization processing if needed. As an electrolyte used for anodizing of an aluminum plate, use of the various electrolytes which form a porosity oxide film is possible, and, generally a sulfuric acid, a phosphoric acid, oxalic acid, chromic acids, or those mixed acids are used. The concentration of those electrolytes is suitably decided according to an electrolytic class.

[0077] Since the processing conditions of anodic oxidation change variously with the electrolyte to be used, it cannot generally specify, but generally, if electrolytic concentration is 5-70 degrees C, current density 5 - 60 A/dm², electrical potential differences 1-100V, and the range for 10 seconds - electrolysis time amount 5 minutes, it is suitable for a 1 - 80-% of the weight solution, and solution temperature. The amount of an anodic oxide film is 1.0 g/m². If few, print durability is inadequate, or it becomes easy to produce the so-called "blemish dirt" with which a blemish becomes easy to stick to the non-image section of the lithography version with, and ink adheres to the part of a blemish at the time of printing. After anodizing is performed, as for an aluminum front face, hydrophilization processing is performed as occasion demands. alkali-metal silicate (for example, sodium-silicate water solution) which is indicated by U.S. Pat. No. 2,714,066, 3,181,461, No. 3,280,734, and No. 3,902,734 as hydrophilization processing used for this invention -- there is law. or [that immersion processing of the base material is carried out in a sodium-silicate water solution in this approach] -- or electrolysis processing is carried out. The approach of processing by polyvinyl phosphonic acid which is indicated by the fluoride zirconic acid potassium currently otherwise indicated by JP,36-22063,B and U.S. Pat. No. 3,276,868, 4,158,461, and 4,689,272 etc. is used.

[0078] The charge of a lithography plate concerning this invention can prepare undercoat on a

base material if needed. Various organic compounds are used as an undercoat component. For example, a carboxymethyl cellulose, The phosphonic acid which has amino groups, such as a dextrin, gum arabic, and 2-aminoethylphosphonic acid The phenylphosphonic acid and naphthyl phosphonic acid which may have a substituent, alkyl phosphonic acid, Organic phosphonic acid, such as glycero phosphonic acid, methylene diphosphonic acid, and ethylene diphosphonic acid, Organic phosphorus acids, such as a phenyl phosphoric acid which may have a substituent, a naphthyl phosphoric acid, an alkyl phosphoric acid, and glycerophosphoric acid, Phenyl phosphinic acid, naphthyl phosphinic acid which may have a substituent, Although chosen out of the hydrochloride of the amine which has hydroxy groups, such as amino acid, such as organic phosphinic acid, such as an alkylphosphine acid and glycero phosphinic acid, a glycine, and beta-alanine, and a hydrochloride of triethanolamine, etc., two or more sorts may be mixed and you may use. The amount of covering of organic undercoat is 2 - 200 mg/m². It is suitable.

[0079] The plate for lithography using the charge of a lithography plate which starts this invention as mentioned above is producible. Image exposure of this plate for lithography is carried out by the solid state laser and semiconductor laser which emit 1200nm infrared radiation from the wavelength of 760nm. In this invention, although a development may be immediately performed after laser radiation, it is desirable to heat-treat between a laser radiation process and a development process. As for the conditions of heat-treatment, it is desirable to carry out for [10 seconds -] 5 minutes within the limits of 80 degrees C - 150 degrees C. By this heat-treatment, laser energy required for record can be decreased at the time of laser radiation.

[0080] After heat-treating if needed, the charge of a lithography plate concerning this invention is developed in an alkaline water solution. The alkali water solution conventionally known as the developer and replenisher of the charge of a lithography plate concerning this invention can be used. For example, inorganic alkali salt, such as a sodium silicate, a potassium silicate, the 3rd sodium phosphate, the 3rd potassium phosphate, the 3rd ammonium phosphate, the 2nd sodium phosphate, the 2nd potassium phosphate, the 2nd ammonium phosphate, a sodium carbonate, potassium carbonate, an ammonium carbonate, a sodium hydrogencarbonate, a potassium hydrogencarbonate, an ammonium hydrogencarbonate, way acid sodium, a way acid potassium, way acid ammonium, a sodium hydroxide, ammonium hydroxide, a potassium hydroxide, and a lithium hydroxide, is mentioned. Moreover, organic alkali chemicals, such as monomethylamine, dimethylamine, a trimethylamine, a monoethyl amine, diethylamine, triethylamine, mono-isopropylamine, diisopropylamine, a triisopropyl amine, n butylamine, monoethanolamine, diethanolamine, triethanolamine, monoisopropanolamine, diisopropanolamine, ethylenimine, ethylenediamine, and a pyridine, are also used. These alkali chemicals are used combining independent or two sorts or more.

[0081] Especially desirable developers are silicate water solutions, such as a sodium silicate and a potassium silicate, in these alkali chemicals. The reason is oxidation silicon SiO₂ which is the component of a silicate. An alkali-metal silicate which is because accommodation of development nature is attained with the ratio and concentration of alkali-metal oxide M₂O, for example, is indicated by JP,54-62004,A and JP,57-7427,B is used effectively.

[0082] Furthermore, it is known that a lot of plates for lithography can be processed, without exchanging the developer in a long duration developing tank by adding a water solution with alkali reinforcement higher than a developer (replenisher) to a developer, in developing negatives using an auto-processor. Also in this invention, this supplement method is applied preferably. Various surfactants and organic solvents can be added if needed in order to raise the parent ink nature of promotion of development nature, control, distribution of development dregs, and the printing version image section to a developer and a replenisher. As a desirable surface active agent, an anion system, a cation system, the Nonion system, and an amphoteric

surface active agent are raised. Furthermore, reducing agents, such as sodium salt of inorganic acids, such as hydroquinone, resorcinol, a sulfurous acid, and sulfurous-acid hydro acid, and potassium salt, and also an organic carboxylic acid, a defoaming agent, and a water softener can also be added to a developer and a replenisher if needed. After treatment of the printing version by which the development was carried out using the above-mentioned developer and the replenisher is carried out with the rinse containing rinsing water, a surface active agent, etc., and the desensitization liquid containing gum arabic or a starch derivative. As after treatment in the case of using it as a plate for printing, the charge of a lithography plate concerning this invention can be used combining various these processings.

[0083] In recent years, in platemaking / printing industry, the auto-processor for the plates for printing is widely used for rationalization of a platemaking activity, and a standardization. This auto-processor sprays and carries out the development of each processing liquid pumped up with the pump from a spray nozzle, consisting of the development section and the after-treatment section generally, consisting of the equipment, each processing cistern, and spray equipment which convey the plate for printing, and conveying the printing version [finishing / exposure] horizontally. Moreover, how to make carry out immersion conveyance of the plate for printing with a guide-among liquid roll etc. into the processing cistern with which processing liquid was filled, and process is also learned recently. It can process in such automatic processing, supplementing each processing liquid with a replenisher according to throughput, the operating time, etc. Moreover, the so-called disposable mode of processing substantially processed with intact processing liquid is also applicable.

[0084] Burning processing is performed to consider as the lithography version of much more high print-durability, although presswork can be presented with it after the lithography version obtained as mentioned above applies desensitization gum by request. When carrying out burning processing of the lithography version, it is desirable to process with counter etching liquid which is indicated by each official report of JP,61-2518,B, 55-28062, JP,62-31859,A, and 61-159655 in the burning processing side. The approach of immersing for it and applying the printing version as the approach into the bat which applied on the lithography version or filled counter etching liquid with sponge and the absorbent cotton into which this counter etching liquid was made to soak, spreading by the automatic coating machine, etc. are applied. Moreover, making it a squeegee, after applying, and making the coverage into homogeneity with a squeegee roller gives a more desirable result. Generally 0.03 - 0.8 g/m² (dry weight) is suitable for the coverage of counter etching liquid.

[0085] The lithography version with which counter etching liquid was applied is heated by the elevated temperature by a burning processor (for example, burning processor:BP-1300 currently sold from Fuji Photo Film Co., Ltd.) etc., after drying, if required. Although whenever [stoving temperature / in this case], and time amount are based also on the class of component which forms the image, its range for 1 - 20 minutes is desirable in 180-300 degrees C. the processing to which the lithography version by which burning processing was carried out is suitably carried out from the former, such as rinsing and gum length, if needed -- ***** -- although things are made, when the counter etching liquid containing a water soluble polymer compound etc. is used, the so-called desensitization processing of gum length etc. can be omitted. the lithography version obtained by such processing is covered over the offset press etc. -- having -- many -- it is used for printing of several sheets.

[0086] When producing the dampening water unnecessary lithography version in this invention, after exposing, heating for promoting the insolubilization reaction by the acid generated from an acid precursor is performed. This heating process is a 80-150-degree C temperature requirement, and it is desirable to be carried out in the range for 5 seconds - 20 minutes.

[0087] The dampening water unnecessary photosensitivity lithography version which passed

through the heating process exposure and if needed is developed with the developer which may dissolve or swell a part or all of a sensitization layer of the image section, or the developer which may swell a silicone rubber layer. In this case, only the case where the sensitization layer of the image section and the silicone rubber layer on it are removed, and the silicone rubber layer of the image section may be removed, and this can be controlled by the strength of a developer.

[0088] As a developer used for the development of the lithography version by the charge of a lithography plate of this invention, a thing well-known as a developer of the dampening water unnecessary photosensitivity printing version can be used. For example, the thing and the polar solvent itself which added the following polar solvent are suitable for aliphatic hydrocarbon, aromatic hydrocarbon (a hexane, a heptane, "Isopar E, H, and G" (trade name of the product made from Esso Chemistry, and aliphatic hydrocarbon) or a gasoline, kerosene, etc.) (toluene, xylene, etc.), or halogenated hydrocarbon (trichlene etc.).

- alcohols (a methanol, ethanol, propanol, and benzyl alcohol --) Ethylene glycol monophenyl ether, 2-methoxyethanol, 2-ethoxyethanol, the carbitol monomethyl ether, the carbitol monoethyl ether, The triethylene glycol monoethyl ether, propylene glycol monomethyl ether, The propylene glycol monoethyl ether, dipropylene glycol monomethyl ether, the polyethylene-glycol monomethyl ether, propylene glycol, a polypropylene glycol, triethylene glycol, tetraethylene glycol

- Ketones (an acetone, methyl ethyl ketone)

- Ester (ethyl acetate, methyl lactate, ethyl lactate, butyl lactate, propylene-glycol-monomethyl-ether acetate, carbitol acetate, dimethyl phthalate, diethyl phthalate)

- In addition to this (triethyl phosphate, tricresyl phosphate)

[0089] Moreover, the thing which solubilized the above-mentioned solvent in water, using a surfactant in adding water to the above-mentioned organic solvent system developer ****, Furthermore, on it, alkali chemicals, for example, a specific silicate, a potassium silicate, A sodium hydroxide, a potassium hydroxide, a lithium hydroxide, the third sodium phosphate, Sodium diphosphate, the third ammonium phosphate, dibasic calcium phosphate, Organic alkali chemicals, such as inorganic alkali chemicals, such as specific metasilicate, sodium bicarbonate, and aqueous ammonia, and a tetra-alkylammonium hydride, monoethanolamine, diethanolamine, triethanolamine, can be added.

[0090] Moreover, depending on the case, tap water and the alkaline water can only be used as a developer, and a surfactant and the above organic solvents can also be added if needed. Moreover, it is also possible to dye it coincidence by adding colors, such as a crystal violet and ASUTORAZON red, to a developer. Development can be performed by well-known approaches, such as grinding against a development brush, after grinding a printing plate against the pad for development which contains the above developers, for example or filling a printing plate with a developer. As temperature of a developer, although negatives can be developed at the temperature of arbitration, it is 10-50 degrees C preferably.

[0091] Thus, since the obtained lithographic plate checks the image formation nature, a stain solution dyes the exposure image section and it can make it possible to detect it. When it does not contain the color for dyeing of the exposure image section in a developer, it is dyed by the stain solution after development. By infiltrating a stain solution into a soft pad and grinding the image section lightly, only the image section is dyed and it can check that development is fully performed to the highlights section by this. One sort chosen from among a water-soluble disperse dye, acid dye, and basic dye as a stain solution or the thing which made independent or two or more sorts of mixed liquor, such as water, alcohols, ketones, and ether, dissolve or distribute two or more sorts is used. In order to raise a dye affinity, it is also effective to add carboxylic acids, amines, a surfactant, a dyeing assistant, a defoaming agent, etc.

[0092] Subsequently the lithographic plate dyed with the stain solution is rinsed, drying after

that can be desirable, it can suppress stickiness of a printing plate by this, and can raise the handling nature of a lithographic plate. Moreover, when accumulating and keeping the lithographic plate processed in this way, in order to protect a printing plate, it is desirable to insert and insert interleaving paper.

[0093] It is desirable to perform above developments and dyeing processings, or rinsing desiccation processing following it with an automatic processing machine. The desirable thing of such an automatic processing machine is indicated by JP,2-220061,A.

[0094] Although you may print by equipping a printing machine with a version immediately after laser drawing when using this invention for the so-called non-processed type of printing version, heat-treating after laser radiation is desirable. As for the conditions of heat-treatment, it is desirable to carry out for [10 seconds -] 5 minutes within the limits of 80-150 degrees C. By this heat-treatment, laser energy required for record can be decreased at the time of laser radiation.

[0095]

[Example] Hereafter, although an example explains this invention to a detail, this invention is not limited to these.

After carrying out trichloroethylene washing of the aluminum plate (quality of the material 1050) with an example 1 thickness of 0.30mm and degreasing, the front face was grained using a nylon brush and the PAMISUTON-water suspension of 400 meshes, and it often washed with water. It etches by immersing this plate in a sodium-hydroxide water solution for 9 seconds 25 45-degree C%, and is HNO₃ 2 more% after rinsing. It was immersed for 20 seconds and rinsed. the amount of etching on the front face of graining at this time -- about 3 g/m² it was . Next, it is 7%H₂ SO₄ about this plate. It considers as the electrolytic solution and is current density 15 A/dm². 3 g/m² Rinsing desiccation was carried out after preparing a direct-current anodic oxide film. Next, the following under coat liquid was applied to this aluminum plate, and 80 degrees C dried for 30 seconds. the amount of covering after desiccation -- 10 mg/m² it was .

[0096] (Under coat liquid)

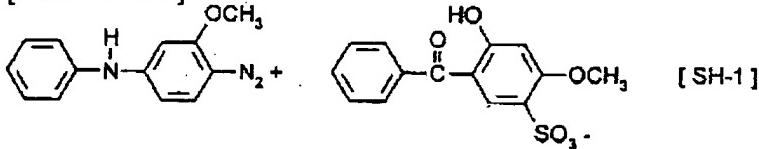
- Beta-alanine 0.1 g and phenylphosphonic acid 0.05g and methanol 40 g and pure water 60 g, next the following solution were applied to the aluminum plate [finishing / the above-mentioned under coat], were dried for 1 minute at 100 degrees C, and the negative-mold photosensitivity lithography version was obtained. the covering weight after desiccation -- 1.5 g/m² it was .

[0097]

(Sensitization liquid)

- An infrared absorption agent (compound - 1) 0.07 g - acid generator (following SH-1) 0.3 S-4P (the Maruzen Petrochemical Co., Ltd. make) g -2, 4-bis-hydroxymethyl-6-methyl phenol 0.5 g - MARUKA Linker M ** Pori (p-hydroxystyrene) 1.5 C-RH g () -AIZEN SPILON BLUE [**** KA] The product made from Trough Chemistry 0.035g and the megger fuck F-177 (the Dainippon Ink & Chemicals, Inc. make --) A fluorochemical surfactant 0.01 g - methyl ethyl ketone 12 g - methyl alcohol 10 g -1-methoxy-2-propanol 8 g [0098]

[Formula 22]



[0099] Scan exposure of the obtained plate for negative-mold lithography was carried out by the semiconductor laser which emits infrared radiation with a wavelength of 830nm. the Fuji Photo Film Co., Ltd. make after heat-treating for 30 seconds at 110 degrees C with a panel heater after exposure -- negatives were developed in developer DP-4 (1:8 water diluents).

Under the present circumstances, when the amount of energy required for record was computed based on the line breadth, the loss in a laser output and optical system, and scan speed of the obtained image, it was 170 mJ/cm². subsequently, the Fuji Photo Film Co., Ltd. make -- the printing plate was processed by gum GU-7 (1:1 water diluents), and it printed with the Hy Dell KOR-D machine. 60,000 good printed matter which does not have dirt in the non-image section was obtained.

[0100] It sets in the example of comparison 1 example 1, and is a compound as an infrared absorption agent. - Except for having used what the opposite anion of 1 put to p-toluenesulfonic-acid ion, and replaced, the plate for negative-mold lithography was obtained like the example 1. although good printed matter was obtained when printed by the same actuation as an example 1 using the obtained plate -- sensibility -- 220 mJ/cm² it is -- it was not enough.

[0101] Example 2(composition of cross linking agent)1-[alpha-methyl-alpha-(4-hydroxyphenyl) ethyl]-4-[alpha and alpha-screw (4-hydroxyphenyl) ethyl] benzene 20g was dissolved in 100ml (10%) of potassium-hydroxide water solutions. It was dropped over 1 hour, agitating formalin (37%) 60ml at a room temperature to this reaction mixture. After agitating reaction mixture at a room temperature for further 6 hours, it supplied in the sulfuric-acid water solution, and crystallization was carried out. After rinsing the obtained paste-like precipitate well, white powder was obtained by recrystallizing using methanol 30ml. Yield of 20g.

[0102] As for the obtained compound, NMR showed that it was the hexa methylol ghost of 1-[alpha-methyl-alpha-(4-hydroxyphenyl) ethyl]-4-[alpha and alpha-screw (4-hydroxyphenyl) ethyl] benzene. The purity of the hexa methylol ghost by Opposition HPLC (column: Shimpac CLC-ODS (Shimadzu make), solvent:methanol / water =60/40 ->90/10) was 92%.

[0103] 20g of this hexa methylol compound -- methanol 1000ml -- warming -- it was made to dissolve, and 1ml of concentrated sulfuric acid was added, and heating reflux was carried out for 12 hours. 2g of potassium carbonate was added after cooling reaction mixture, further, after churning, it condensed, 300ml of ethyl acetate was added, the solvent was distilled off after rinsing and desiccation, and the white solid-state was obtained. Yield of 22g. As for the obtained compound, NMR showed that it was the hexamethoxy methylation object of 1-[alpha-methyl-alpha-(4-hydroxyphenyl) ethyl]-4-[alpha and alpha-screw (4-hydroxyphenyl) ethyl] benzene. The purity of the hexamethoxy methylation object by Opposition HPLC (column: Shimpac CLC-ODS (Shimadzu make), solvent:methanol / water =60/40 ->90/10) was 90%.

The triethylamine salt of p-toluenesulfonic acid was added to the aluminum plate which processed like the example 1 and carried out the under coat, the following sensitization liquid which adjusted pH to 3.0, 4.0, and 5.0 was applied, respectively, it dried for 2 minutes at 100 degrees C, and the negative-mold photosensitivity lithography versions A, B, and C were obtained. the weight after desiccation -- 2.0 g/m² it was .

[0104]

(Sensitization liquid)

- An infrared absorption agent (compound - 1) 0.1 g The - aforementioned cross linking agent 0.21g and a phenol-formaldehyde novolak () [weight-average-molecular-weight] 12000 2.1 g - diphenyliodonium -9, 10-dimethoxy ANTORASE NSURUHONETO 0.02g and the megger fuck F-176 (the Dainippon Ink & Chemicals, Inc. make --) fluoroochemical surfactant 0.06g - methyl ethyl ketone 15 g -2-methoxy-1-propanol 12 g [0105] The obtained negative-mold lithography version was processed on the same conditions as an example 1, and when printed, the good printed matter which does not have dirt in the non-image section was obtained. Under the present circumstances, there was 60,000 obtained printing number of sheets. Next, although this printing version was saved at 45 degrees C and 75% of relative humidity and same processing was carried out, the good printed matter which does not have dirt in the non-image section similarly was obtained.

[0106] The negative-mold lithography version was produced in example of comparison 2 example 2, using NK3555 made from Japanese sensitizing dye as an infrared absorption agent. Although this printing version can process good immediately after manufacture, if saved on the same conditions as an example 2, image formation ability will have been lost.

[0107] The following sensitization liquid was applied to aluminum plate which was used in the example 3 example 1 and which carried out surface preparation, and the positive type lithography version was produced.

(Sensitization liquid)

- An infrared absorption agent (compound - 1) 0.10g The - naphthoquinone -1, 2-diazido-sulfonyl chloride, and PI An esterification object with ROGARORU-acetone resin () [United States patent] It is indicated by the example 1 in the No. 3,635,709 specification. A ***** thing 0.90g Novolak resin obtained from - cresol and formaldehyde (6:4 Meta: Para ratio = weight average molecular weight 1800) 2.00g -p-octyl phenol-formaldehyde novolak 0.02g - A naphthoquinone -1, 2-diazido-4-sulfonyl chloride 0.01g - tetrahydro phthalic anhydride 0.05g - 4-(p-N and N-screw (ethoxy carbonylmethyl) friend NOFENIRU)-2, 6-screw (TORIKURORO methyl) - S - Triazine 0.02g -4-(p-N-(p-hydroxy benzoyl) aminophenyl)-2, a 6-screw (TORIKURORO methyl)-S-thoria Gin The counter ion of - Victoria pure blue BOH 0.02g 1-naphthalene - The color used as the sulfonic acid 0.03g and the megger fuck F-177 (the Dainippon Ink & Chemicals, Inc. make --) fluorochemical surfactant 0.06g - methyl ethyl ketone 20 g - methyl alcohol 7 g [0108] After exposing the obtained plate for positive type lithography by laser by the same conditions as an example 1, it processed through the auto-processor which taught the developer by Fuji Photo Film Co., Ltd., DP-4 (1:8), and rinse FR-3 (1:7). subsequently, the Fuji Photo Film Co., Ltd. make -- the printing plate was processed by gum GU-7 (1:1), and it printed with the Hy Dell KOR-D machine. 70,000 good printed matter which does not have dirt in the non-image section was obtained.

[0109] Example 4 [production of the non-processed mold lithography version]

(Composition of a sulfonic-acid type-of-seasonal-prevalence high molecular compound)

<Composition of monomer> acetonitrile 200ml, cyclohexyl alcoholic 11g, and pyridine 8.8g were put into the 500ml three necked flask, and was agitated. Vinylbenzene sulfonyl chloride 20.2g was dropped cooling on ice. After agitating at the room temperature after dropping for 2 hours, it opened in 1l. water and ethyl acetate extracted. After making it dry with magnesium sulfate, the monomer (cyclohexyl ester of p-vinylbenzene sulfonic acid) was obtained by carrying out reduced pressure distilling off of the solvent, and refining by performing the column chromatography using silica gel. The calculated value of elemental analysis was C:63.13% and H:6.81%, and actual measurements were C:63.01% and H:6.85%.

[0110] Monomer 20g and methyl-ethyl-ketone 40g compounded by the above were put into the <composition of sulfonic-acid type-of-seasonal-prevalence high molecular compound> 200ml three necked flask, and azobis dimethylvaleronitrile 0.25g was added under 65-degree-C nitrogen air current. After maintaining at this temperature, agitating for 5 hours, the bottom solvent of reduced pressure was distilled off and the solid-state was obtained. It turned out that it is by the polymer of weight-average-molecular-weight 10,400 by GPC (polystyrene criterion).

[0111] (Production of the non-processed mold lithography version) After carrying out trichloroethylene washing of the aluminum plate (quality of the material 1050) with a thickness of 0.30mm and degreasing, the front face was grained using a nylon brush and the PAMISUTON-water suspension of 400 meshes, and it often washed with water. It etches by immersing this plate in a sodium-hydroxide water solution for 9 seconds 25 45-degree C%, and is HNO₃ 2 more% after rinsing. It was immersed for 20 seconds and rinsed. the amount of etching on the front face of graining at this time -- about 3 g/m² it was . Next, it is 7%H₂ SO₄ about this plate. It considers as the electrolytic solution and is current density 15 A/dm². 3

g/m² Rinsing desiccation was carried out after preparing a direct-current anodic oxide film. Next, the following solution was prepared, and it applied to the aluminum plate [finishing / the above-mentioned processing], it dried for 2 minutes at 100 degrees C, and the original edition for the lithography versions was obtained. the weight after desiccation -- 1.2 g/m² it was .

[0112]

(Solution)

- The sulfonic-acid type-of-seasonal-prevalence high molecular compound compounded above 1.00g - infrared absorption agent (compound - 1) 0.15g The counter ion of - Victoria pure blue BOH 1-naphthalene - The color used as the sulfonic acid 0.05g and the megger fuck F-177 (the Dainippon Ink & Chemicals, Inc. make --) fluorochemical surfactant 0.06g - methyl ethyl ketone 20 g - methyl alcohol 7 g [0113] The obtained original edition for the lithography versions was exposed by laser by the same conditions as an example 1. After exposure and after heat-treating for 1 minute at 110 degrees C, it printed with the Hy Dell KOR-D machine. Under the present circumstances, it observed whether dirt would be generated in the non-image section of printed matter. The good printed matter which does not have dirt in the non-image section was obtained.

[0114] Example 5 [production of the positive type dampening water unnecessary photosensitivity lithography version]

(Production of a base material) After having been immersed in 10% water solution of the 3rd sodium phosphate kept at 80 degrees C for 3 minutes, degreasing and graining 1S aluminum plate with a thickness of 0.24mm with a nylon brush, it etched for about 10 minutes by the sodium aluminate, and 3% water solution of sodium hydrogensulfates performed the desmut treatment. It is this aluminum plate in 20% sulfuric acid Current density 2 A/dm² It set and anodic oxidation was performed for 2 minutes.

[0115] On the above-mentioned base material, it applied and heated (100 degrees C, 1 minute), and the coating liquid of the following presentation was dried so that it might become 1 micrometer of desiccation thickness, and the primer layer was formed.

- SAMPUREN IB1700D (Mitsuhiro -- formation -- PORIURE made from Co., Ltd.) A tongue 10 Weight section A -p-diazo diphenylamine and a paraformaldehyde The hexa fluorophosphoric acid salt of ***** 0.1 and DIFENSA MCF 323 () Weight section [Dainippon Ink & Chemicals] Make, a surfactant The 0.03 weight section - propylene glycol methyl ether acetate 50 weight sections - methyl lactate 20 Weight section - pure water 1 Weight section

[0116] Then, 20 count exposure was carried out using the FT261 V UDNS ULTRA-PLUS FLIPTOP PLATE MAKER vacuum exposure machine made from NEAKU.

[0117] (Sensitization layer) The sensitization liquid used for the above-mentioned aluminum plate in the example 2 was applied, and it dried for 1 minute at 90 degrees C. the covering weight after desiccation -- 2 g/m² it was .

[0118] (Silicone rubber layer) On the above-mentioned sensitization layer, it is the following silicone rubber presentation liquid Dry weight 2 g/m² It applied so that it might become, and 100 degrees C dried for 2 minutes.

- alpha, omega-divinyl poly dimethylsiloxane (Polymerization degree: About 700) 9 Weight section -(CH₃)₃-Si-O-(SiH(CH₃)-O)₈-Si₃ (CH₃) 0.5 Weight section - poly dimethylsiloxane (polymerization degree: about 8,000) 0.5 Weight section - olefin-chloroplatinic acid The 0.08 weight section - inhibitor (CH**C-Si(CH₃)₂O Si₃ (CH₃)) 0.3 The weight section and gamma-methacryloxypropyl trimethoxy silane 0.3 The weight section and Isopar E (product made from Esso Chemistry) 140 Weight section [0119] On the front face of the silicone rubber layer obtained as mentioned above, the biaxial-stretching polypropylene film with a thickness of 8 micrometers was laminated, and the dampening water unnecessary photosensitivity lithography version was obtained on it. After exposing the obtained printing version by laser by the same conditions as an example 1, it exfoliated and the laminated film was heated on 100

degrees C and the conditions for 3 minutes in oven. After the printing version [finishing / heating] was immersed in the 40-degree C liquid of tripropylene glycol for 1 minute, when the printing plate was underwater ground with the development pad, in the exposure section, silicone rubber remained and the dampening water unnecessary lithography version of the positive type which the sensitization layer exposed was obtained in the unexposed section. [0120] In example 6 example 3, sensitization liquid was replaced below, and was applied and the positive type lithography version was produced.

(Sensitization liquid)

- An infrared absorption agent (compound - 2) 0.10g Novolak resin obtained from - cresol and formaldehyde (6:4 Meta: Para ratio = weight average molecular weight 1800) 2.00g The counter ion of - Victoria pure blue BOH 1-naphthalene - The color used as the sulfonic acid 0.03g and the megger fuck F-177 (the Dainippon Ink & Chemicals, Inc. make --) fluorochemical surfactant 0.06g - methyl ethyl ketone 20 g - methyl alcohol 7 g [0121] After exposing the obtained plate for lithography by laser by the same conditions as an example 1, it processed through the auto-processor which taught the developer by Fuji Photo Film Co., Ltd., DP-4 (1:8), and rinse FR-3 (1:7). The clear positive image was obtained. subsequently, the Fuji Photo Film Co., Ltd. make -- the printing plate was processed by gum GU-7 (1:1), and it printed with the Hy Dell KOR-D machine. The good printed matter which does not have dirt in the non-image section was obtained.

[0122]

[Effect of the Invention] In this invention, by using a specific infrared absorption ingredient, digital data, such as a computer, to direct platemaking is possible, high sensitivity can be shown, and the charge of a laser straight-writing mold lithography plate excellent in the printability can be offered.

[Translation done.]